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07/18/97

TO: **Jet Propulsion Laboratory**
Attn: Mr. Kirk Bilby
MS 190-220, Org 6271
4800 Oak Grove Drive
Pasadena, CA 91109-8099

SUBJECT: Letter Of Transmittal, Monthly Status Report

In accordance with Contract #960100, Infotec Development Inc. hereby submits one original hard copy of DRD MA006, Monthly Progress Report, for the month of June 97. Please contact me at 818-584-0878 for questions.

R. KENT THOMSON
ISDS Program Manager

Original and Copies to Mr. Don Lord (525 3600)

Cover Letter and Cost Appendices to:
Mr. Kirk Bilby (190 220)
Mr. David Spencer (264 426)

Information Systems Development Support (ISDS) Contract
Monthly Progress Report

Developed by
The ISDS Team
2700 E. Foothill, Suite 200
Pasadena CA 91107

Under Contract No. 960100
Control Number: \MAR's\..\9706-01.DOC Rev 0
DRD # MA006
for the month of June 97

for the

California Institute of Technology
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena CA 91109-8099

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1. Executive Summary

"A brief narrative on significant accomplishments and events of the reporting period."

- The long awaited T3 became operational on 16 July. Work to configure and test the T3 could have been done earlier but activation of the circuit was delayed until 11 July as a result of a network freeze for Mars Pathfinder. After resolving a number of problems with the GTE end, the circuit was up end-to-end on 12 July. Routers were configured and tested beginning Monday, 14 July. A number of problems were found resulting from the network configuration in Building 525. These problems were resolved on 21 July as JPL moved to the new Cisco 7513 router.
- "A Little Rock On Mars," written by our own Sue Kientz, was picked up by Microsoft NBC. Sue is a fervid Web Artist with a fertile imagination and she describes this work as something she did to relax. The internal "Little Rock" can be viewed at http://eis.jpl.nasa.gov/~skientz/little_rock/
- Gary Oye returned to our organization as the Product Assurance Organization Manager. He had been assigned full time as a manager in JPL's Software Product Management and Control group since October 96. This group was outsourced to Allied in January 97. Gary will work ISDS Quality Assurance and Configuration Management and is responsible for planning and implementing ISO9000 for our organization. He continues to support SPMC heavily as Allied spins up on the task.
- A Business Management Review was held 25 June. Financially the ISDS program looks good. The combination of lower indirect costs, an increase in direct labor, and a good January 97 budget have resulted in a small drop in overhead. Actuals for this month show an additional decrease.
- A "Quality Of Employment With ISDS" survey was completed last month. This survey was conducted as part of a development effort on CWO 49. The test survey will provide information required to size hardware requirements for the CWO as well as some useful information on ISDS employees. In general, our employees are very happy about the team and management. Survey results can be viewed on request and have been hosted on our internal web site.
- A significant push to market ISDS capabilities to other organizations in JPL began with briefings to TMOD on 9 July. As a result, Ken Kimball asked us to follow up with briefings to Gael Squibb and Susan Murphy.
- Mr. Gary Oye returned to our organization after almost a year at the helm in SPMC. He will resume his position as our Product Assurance Organization Manager and begin working specifically on our ISO9000 certification.

Significant personnel actions since the last report:

- CWO 11 - On 20 June, Mr. Greg Ellis began working under a short contract to identify Year 2000 problems with the Subsystem Interface Verifier (SIV). His work will be complete shortly.
- CSC put Mr. Steve Rockwell on casual status on 2 June. He accepted employment with Allied Signal to work Spacecraft Ranging. On 15 July, Mr. Rockwell decided to return to ISDS to become the CDE for Multi-Use Software (MSW) and the Subsystem Interface Verifier (SIV). In the past, we might have staffed these functions with two people. However, Steve's broad range of experience with the DSN and his management experience in ISDS will let him manage and work both MSW and SIV quite handily.

Open staff requirements

- There are currently no open staff requirements.
- Sec 345, Automation and Control, Muh Yang, GEOSAR:

  We have stopped working to identify two people with VxWorks talent to support a new project for Mr. Muh-Wang Yang, Automation and Control Section, Avionic Systems and Technology Division, Engineering and Science Directorate. We became aware of this requirement on 11 April and have identified several well qualified candidates. None of the candidates fit within the required cost profile.

  On 19 June we were informed that budget constraints have been lifted and more attractive salaries can be offered to candidates. We have begun looking for people again.

  One week after we began looking, we were informed that Muh Yang had hired someone.
- Sec 345, Automation and Control, Jim Wang, Tropospheric Emission Spectrometer (TES):

  This project was identified to us on 17 June. On 19 June, it was identified that two individuals with real-time S/W development experience using VxWorks on RISC6000 processors are required. One immediately, one in November 97.

  On 27 June, Mr. Lionell Griffith interviewed with Jim Wang and it appeared that Mr. Wang wanted him to support TES. On 1 July, we were informed that Mr. Wang had hired a person from OAO.

- Section 394, Imin Lin, 22 May:

  Last month: *Requirements were identified on 22 May for a person to work Network Control Program GlueWare. GlueWare is object oriented software developed for multiple purposes: 1) wrap selected portions of Multi-Use software for reuse, 2) Provide legacy system proxies, 3) provide unique DSN protocol gateways. We have are interviewed several personnel and will be issuing offers this week.*

  An offer was issued to Mr. Joe Edmunson. He held the offer for two weeks and then declined. During this period JPL found another person to staff the task from Telos.

Contract Work Orders and Staff

13-Jun-97

#	Title	CWO Manager	Staff Members	
3	**Telemetry Simulation Assembly (TSA II)**	**Kathleen Rundstrom**		
			Ron	Holden
			Youbin	Mao
			Matthew	Dailey
			Shyan-wee (Joseph)	Jao
8	**Section Network/System Administrator**	**Roger Thomson**		
			Hajime	Sano
11	**CSN Multi-Use S/W (MSW)**	**Kathleen Rundstrom**		
			Nhon	Hoang
			Julianna	Magallon
13	**Goldstone Solar System Radar Data Acquisition Sys**	**Roger Thomson**		
			Robert	Frye
			Chad	Nikoletich

#	Title	CWO Manager	Staff Members	
14	**DSCC Telemetry Subsystem (DTM) Software**	**Kathleen Rundstrom**		
			Calvin	Cheung
			Bo	Cen
			Ron	Holden
			Hon	Tran
15	**Product Verification Subsystem/SSCANSAR**	**Kathleen Rundstrom**		
			Kenneth	Bell
16	**Enhancement & Maintenance of Metric Prediction**	**Roger Thomson**		
			Jonathon	Walther
			Jeffrey	Schredder
17	**GCF Interface**	**Edward Embick**		
			David	Haupt
27	**Advanced Comm Services (ACS) Data Delivery**	**Kathleen Rundstrom**		

#	Title	CWO Manager	Staff Members	
28	**Advanced Comm Services (ACS) Monitor/Control**	**Kathleen**	**Rundstrom**	
			Erik	Barkley
29	**Monitor & Control X-Server Support**	**Edward**	**Embick**	
			Jay	Cai
30	**Network Control Program Common Services**	**Roger**	**Thomson**	
			Robert	Donnelly
			Geoffrey	Coward
31	**Adv Comm Svcs Rel Net Svc CS**	**Kathleen**	**Rundstrom**	
			Michael	Dern
32	**Adv Comm Svcs Telem Chanl Assmbly CS**	**Kathleen**	**Rundstrom**	
33	**DSCC Radio Science Comm Processor S/W**	**Kathleen**	**Rundstrom**	
			Vui	Vu
36	**Section 395 Programming Support**	**Edward**	**Embick**	
			John	Veregge

#	Title	CWO Manager	Staff Members
39	**SPMC Support**	**Roger Thomson**	
			Gary Oye
43	**System Admin Support to EIS**	**Roger Thomson**	
			George Wang
			David Coppedge
			Michael Huang
45	**Sea Dragon Command Center Test Bed**	**Kathleen Rundstrom**	
			Michael Guadarrama
46	**EIS File Service Technical Writer**	**Edward Embick**	
			Susan Kientz
47	**VLBI Project Software Engineer**	**Edward Embick**	
			Jeff Deifik
48	**MGSO Documentation Technical Support**	**Edward Embick**	
			Martha Perdomo

#	Title	CWO Manager	Staff Members	
49	**Duplicating and Distribution Support**	**Edward Embick**		
			Concepcion	Alvarez
			Iris	Young
			Hao	Le
			George	Mondol
50	**Electronic Forms and Inventory**	**Edward Embick**		
			Dave	Swantek
			Karen	Gerfen
52	**NPP Development Center**	**Steve Rockwell**		
			Steve	Rockwell
53	**34 Meter Array Development**	**Kathleen Rundstrom**		
			Ron	Holden
54	**Galileo CD Technical Writer**	**Edward Embick**		
			Susan	Kientz
55	**TC & DM Test Support**	**Edward Embick**		
			Cindy	Lush

#	Title	CWO Manager		Staff Members	
56	**SPC and DMD Implementation**	**Edward**	**Embick**		
				Clyde	Chadwick
				Jin	Ma
57	**UNIX System Administrator**	**Edward**	**Embick**		
				Dimitrios	Gerasimatos
60	**Command Processor Assembly**	**Edward**	**Embick**		
				Kenneth	Bell

2. CWO Status and Recommendations

Paragraphs in Italics below identify the generic context in which the status of each active CWO will be discussed. This is presented here as a guideline for both the writer and the reader.

Performance Status

"The Contract Work Order Manager's assessment of progress made in meeting the requirements of the CWO. The CWO Manager shall identify current problems associated with these efforts and any corrective actions to be taken."

Major Accomplishments

"Identify contractual deliveries, accomplishment of critical activities, Contract reviews and CWO milestones."

Cost/Funds Status

"Address relevant areas of cost, such as potential cost problems, their estimated magnitude, planned corrective action and predicted cost outcome. Any projected changes in the CWO's cost Estimate-at-Completion (EAC) shall be fully explained. Contrast the EAC with the current funds ceiling and identify funding shortfalls or overages. Identify funds expiration date."

Schedule Status

"Identify activities and milestones that have slipped from the baseline schedule, with the reason(s) for the slip, and identification of the corrective action measures implemented."

Quality/Config Management

"The Product Assurance Program Manager's assessment of this CWO including current issues, accomplishment of tasking, plans, changes to budget requirements, et al."

Problems and Proposed Solutions Summary

"The CWO Manager's summary of problems and proposed solutions including requirements for support from JPL."

Plans

- *"Forecast Accomplishments. Identify activities and milestones that are expected to be completed during the next reporting period."*
- *"Proposed Re-plans. Identify schedule items that should be replanned and new items to be incorporated into the established baseline schedule."*

"Proposed Cost Adjustments. Identify adjustments to the CWO Target Cost which are required for changes in scope."

CWO Status Summary

CWO #	Title	Cost	Schedule	Performance	Staff	Funding
3	Telemetry Simulation Assembly (TSA II)					
8	Section Network/System Administrator					
11	DSN Multi Use Software (MSW)					
13	Goldstone Solar System Radar Data Acquisition					
14	DSCC Telemetry Subsystem (DTM) Software					
15	Product Verification Subsystem/SSCANSAR					
16	Enhancement & Maintenance of Metric Prediction Software					
17	GCF Interface (GIF)					
27	Advanced Communications Services (ACS) Data Deliverv					
28	ACS Monitor & Control (M&C)					
29	M&C X/Server Supt					
30	Network Control Program					
31	Reliable Network Server					
32	ACS TCA Common Svcs					
33	Radio Science					
36	Sec 395 Programming Supt					
39	SPMC Support					
43	EIS Sys Admin Supt					
45	Sea Dragon Command Center Test Bed					
52	NPP Development Lab					
53	34 Meter Array Development					
54	Galileo CD Technical Writer					
55	TC & DM Test Support					
56	SPC and DMD Implementation					
60	Command Processor Assy					
GOOD						
WATCH CLOSELY						
IN TROUBLE						

2.1 CWO 01 was closed on 25 Jan 95

2.2 CWO 02 was closed 17 Sep 95

2.3 CWO 03 - Telemetry Simulation Assembly (TSA II)

2.3.1 Performance Status

2.3.1.1 Major Accomplishments

- Continued the development of TSAII software, with AVTEC's new interface definition. Continued to interact with Avtec regarding the new hardware software interface.
- Wrote software to exercise and test Avtec Monarch TXE board
- Redesigned TSAII's TSAS component to support a new 9 giga-byte drive.

2.3.1.2 Cost/Funds Status

- CWO 3-3 for FY97 is running under budget because Douglas Lam was taken off the Work Order at the customers request in November of 1996, Youbin Mao went on vacation in December'96 and Mr. Shyan-Wee Jao, a consultant, did not charge the work order from Dec.'96 through Jan'97 ,Mar.'97 and April 97.

2.3.1.3 Schedule Status

- The software schedule has slipped to accommodate the uncertainty in the hardware development area. The Avtec hardware delivery has been postponed another 3 weeks, into the middle of July.

2.3.2 Quality/Config Management

- Idle.

2.3.3 Problems and Proposed Solutions Summary

- The Avtec hardware delivery has been postponed another 3 weeks, into the middle of July. It is uncertain whether this will allow for enough interface testing before the end of the Fiscal Year.

2.3.4 Plans

- Continue development of the TSAII software and perform outstanding anomaly fixes.
- Perform hardware / software interface testing when the hardware finally gets delivered.

2.4 **CWO 04 -** was closed on 3 Jan 1995.

2.5 CWO 05 - Design Engineering and Logistics Support

- This work order is now defunct as the task has been outsourced to Allied Signal. A contractual action by JPL has been requested to close the CWO.

2.6 CWO 6 - was closed on 17 Sep 95.

2.7 CWO 7 - was closed on 17 Sep 95

2.8 CWO 8 - Section Network/System Administrator

2.8.1 Performance Status

2.8.1.1 Major Accomplishments

- Jim Lesh's group- Jim Lesh's group hired approximately ten people: co-ops, summer hires, and permanent hires. I helped them set up Macs and PCs. This involved creating Novell server accounts, submitting Hi-Net port activation requests, configuring Win95 for network access (IP, IPX), installing application software, familiarizing new users with the JPL computing environment, registering and updating DNS entries, submitting x500 changes/additions.

- New scanner- Researched and helped order new scanner. Set it up in printer room. Installed software and drivers. Configured it to ready status. Change of secretaries- Sylvia Swaney, secretary for several groups, retired. Colleen Tyler was hired in to replace her. Helped transitioncomputer functions. Familiarized Colleen with local computing environment. Set up Novell server accounts. Setup e-mail accounts. Installed and configured e-mail applications and web browser software. Swapped printers with a user in B238 so Colleen can print reports on carbonless paper.

- Novell server connection- Worked with Network Services to diagnose whetherlast month's subnet reroute was effective. It appears to have solved the JPL-161-SERV disconnect problem PC users were experiencing.

- System 7.6.1- Test installed Mac OS 7.6.1 in anticipation of future user requests.

- LanRover- Section 336 is switching over to institutional dial-in support and will no longer be sharing our LanRover. Deactivated their user accounts except for two users who still need access, because institutional dial-in services do not work on Macs yet. Coordinated with Sec 331 AA to have cabinets installed for new LanRover location in room 113 sound room. Coordinated with Sec 331 and 336 AAs to have phone lines moved to new LanRover location. Pacific Bell has yet to resolve how to install phone lines in new location.

- Novell server- Bob Sniffin would like to upgrade JPL-161-SERV hardware. Obtained commitments from group managers to pay for new server hardware.

- QuickMail server- All but one user is off of the QuickMail server. When Stan Butman returns from vacation, he will check and delete his messages. Then this Mac can be converted to a backup server.

- Backups- Researched and ordered new APS Technologies 8 tape mini-library for performing Mac backups. Shortly after it was ordered, the old backup tape drive died. A borrowed replacement could not be configured. Received new tape drive and installed. Performed some test backups.

- D&NS Outsourcing- Attended several meetings/presentations.

- Secretaries PCs- Consulted with Yolanda Castillo, Section AA, giving her advice regarding purchasing PCs for the B161 secretaries.

2.8.1.2 Costs/Funds Status

- CWO 8-4 for FY97 is on budget for labor hours but is underfunded by $9k because rate changes resulting from the 3rd floor expansion.

2.8.1.3 Schedule Status

- This is a LOE support task with no schedule baseline.

2.8.2 Quality/Config Management

- N/A

2.8.3 Problems and Proposed Solutions Summary

- None

2.8.4 Plans

- Continue system and network support.

2.9 CWO 9 - DSCC Tracking Subsystem (DTK) Software: Metric Data Assembly was completed on 15 Sep 96.

2.10 CWO 10 - MPA Enhancements - Automate 26M Operations was completed on 15 Sep 96

2.11 CWO 11 - DSN Multi-Use Software (MSW)

2.11.1 Performance Status

2.11.1.1 Major Accomplishments

- Van Hoang is 30% complete in the code walk through of MSW Year 2000 code inspection. Three non-compliance AR's have been reported so far.
- Greg Ellis is 25% complete in the code walk through of SIV Year 2000 code inspection.
- MSW 1.8.4 has been delivered to ISDS CM. This release contains:
    - Multiple semaphore code changes for SUN and Real/IX.
    - Corrections for the 68040 vxWorks environment.
    - Translator's FAT update corrections.

The MSW 1.8.4 is a baseline release on the following platforms:

- SUN Solaris
- VxWorks (Power PC)
- VxWorks (68040)
- VADsWorks
- Real/IX 68K
- Real/IX 88K
- OS/2

- Support was provided by Julie Magallon to the following subsystems:
    - Microwave Generic Controller (UGC)
    - Block V Receiver (BVR)
    - Translator Service
    - Telemetry Channel Assembly (TCA)
    - Metric Data Assembly (MDA)
    - Antenna Pointing Control (APC)

SIV support is being provided to Translator Service

2.11.1.2 Cost/Funds Status

- CWO 11-7 is underfunded by 45K because Ms. Julie Magallon service was extended through the end of JPL FY97 and Mr. Gregory Ellis was added to the task to accomplish SIV Y2K code inspection. A CWO Supplement has been submitted to accommodate the shortfall and update the SOW.

2.11.1.3 Schedule Status

- On schedule.

2.11.2 Quality/Config Management

- Updated RDD and delivered build for MSW 1.8.2

2.11.3 Problems and Proposed Solutions Summary

- None.

2.11.4 Plans

- Chaw completes the MSW matrix.
- Continue with MSW and SIV Year 2000 code inspection.
- Release MSW 1.8.4 to SPMC.
- Start to update MSW User Guide

2.12 CWO 12 - was closed on 17 Sep 95

2.13 CWO 13 - Goldstone Solar System Radar Data Acquisition System Design and Integration

2.13.1 Performance Status

2.13.1.1 Major Accomplishments

- Began integrating correlator with BLK V RCVR. The test bed includes dual taxi and correlator boards.
- Ordered all the production parts to fabricate 20 boards. Completed final PCB updates and submitted electronically to board house for manufacture.
- Started preliminary design of PN coder board.

2.13.1.2 Cost/Funds Status

- CWO 13-6 for FY97 is under budget by $63K because of 1) ODC of 18K for production of correlator boards being shifted out to June '97 and 2) anticipated labor hours are lower by 764 hrs to be used between April '97 and end of Fiscal year.

2.13.1.3 Schedule Status

- Tasks are on schedule - See attachment.

2.13.2 Quality/Config Management

- N/A.

2.13.3 Problems and Proposed Solutions Summary

- None.

2.13.4 Plans

- Continue integration test with BLK V RCVR Assemble 20 production boards.
- Continue with PN coder design

2.14 CWO 14 - DSCC Telemetry Subsystem (DTM) Software

2.14.1 Performance Status

2.14.1.1 Major Accomplishments

- Delivered a TCA green build (Version 10.2.4) with the current operating system kernel provided by OS vendor.
- Performing ongoing anomaly fixes to TCA software based on data from Acceptance Testing. These anomaly fixes will be delivered as part of future releases of the Phase 2.0 software.
- Completed code that generates the AXAF format table and have begun engineering tests.

2.14.1.2 Cost/Funds Status

- CWO 14-7 is on budget.

2.14.1.3 Schedule Status

- The ISDS team is currently working on developing a new schedule for the rest of FY 1997 and FY 1998.

2.14.2 Quality/Config Management

- Delivered TCA green build OP-J Version 10.2.4.

2.14.3 Problems and Proposed Solutions Summary

- Current anomalies include possible data corruption problems, Mailbox corruption problems, TCA task hang-ups and board hang-ups. These anomalies have been traced to vendor software and hardware. Radstone, the hardware vendor, has been working with the telemetry team to solve these problems.

2.14.4 Plans

- Continue work on fixing current anomalies and support debugging of any new anomalies found.

- Participate in the requirement analysis and the preliminary design phases of the work planned for the next DTM delivery and for FY 1998. Provide a detailed schedule for completion of this work.
- Complete testing of AXAF format table code and deliver engineering version to SPMC by the end of July 1997.

2.15 CWO 15 - Alaska SAR Facility Product Verification Subsystem Processor S/W

2.15.1 Performance Status

2.15.1.1 Major Accomplishments

- This CWO was inactive this month at the request of the customer.

2.15.1.2 Cost/Funds Status

- CWO 15-3 is significantly under budget because two personnel have been moved off this CWO and not replaced. We are interested in replacing these personnel but, to date, JPL has not indicated any immediate need.

2.15.1.3 Schedule Status

- On Schedule.

2.15.2 Quality/Config Management

- Idle.

2.15.3 Problems and Proposed Solutions Summary

- None

2.15.4 Plans

- None.

2.16 CWO 16 - Enhancement & Maintenance of Metric Prediction Software

2.16.1 Performance Status

2.16.2 Major Accomplishments

- Ported SSSM software to version 4.2 of the CC compiler and Rogue Wave class libraries. Several functions and features did not work the same way from one version to the other, so considerable debugging effort and experimentation with workarounds was necessary. In addition, the SA's combined the compiler "upgrade" with the break-in recovery, which made it difficult to establish a baseline in the environment.
- Learned how to use the workflow manager interface functions, preparatory to incorporating these functions into the SSSM code.
- Analyzed the (NSS) Antenna Pointing Vector angular rate algorithm and documented the mathematical derivation.
- Analyzed the (NSS) stepsize algorithm in Antgen and determined that there is no rationale for the current max and min step values. (Bob Tausworth is doing an analysis of upper and lower error bounds, which will be applicable to all applications). Discovered a flaw caused by event boundary alignment, which could result in a stepsize less than the minimum. I developed an algorithm to correct this flaw.

- Installed Rational Rose. Attended training classes on Rational Rose and UML. Evaluated these tools and made the determination that because of the algorithmic nature of my task this tool's value is in documentation , not in design.
- Analyzed the existing NSS (Fortran) cablewrap logic and designed the equivalent NPP logic. I coded about 50% of this functionality in C++. Developed test cases for unit testing using Microsoft Excel.
- Analyzed the (NSS) Atmospheric Refraction Parallax correction algorithm. Researched the physical and mathematical justification of this algorithm from memos and talking to JPL experts. Most of the algorithm is now understood. If money and time is available the accuracy of the underlying refraction model should be evaluated in light of the latest models now being used at the antenna stations. Using Excel, I plotted Transverse Displacement vs Elevation Angle to help in this evaluation effort. To validate these results I ran a standalone version of the current NSS logic.
- Analyzed the NSS (Fortran) code which accesses the Trigger file data. Reverse engineered the layout and data formats of the Trigger file. Designed and partially implemented C++ code to extract data from the trigger file, and format and store it.

2.16.2.1 Cost/Funds Status

- CWO 16-6 is currently underfunded by 201K. Additional scope has been added at JPL's request. A CWO supplement has been submitted to cover the increased cost.

2.16.2.2 Schedule Status

- Schedule maintained by JPL.

2.16.3 Quality/Config Management

- N/A.

2.16.4 Problems and Proposed Solutions Summary

- None.

2.16.5 Plans

- Interface SSSM code with workflow manager automation.
- Begin work on REC metric predict in NPP.
- Map the current antenna pointing vector algorithms to SPICE functionality. (Stellar Aberration, Precession and Nutation, Polar Motion, Geodetic correction) and implement these interfaces in C++.
- Build a C++ interface to Fortran data structures which are initialized from files using the Fortran NAMELIST feature.
- Complete the Cable Wrap and Trigger file coding.

2.17 CWO 17 - GCF Interface (GIF)

2.17.1 Performance Status

- Mr. David Haupt, hired as a consultant, is supporting the development and unit test of a global set of GIF data block conversion libraries, standalone interface program for processing CDR IDR files and outputting converted data to TCDM standard core services, and new input and output interface to FTDD services effort which is scheduled to complete September 21, 1997. This support includes adding new

capabilities, failure report correction, change request implementation, and documentation updating prior to delivery to AMMOS configuration control. No support was provided during the month of June.

2.17.1.1 Major Accomplishments

- Nothing to report this month.

2.17.1.2 Cost/Funds Status

- CWO 17-3 has been extended through the end of JPL FY97 and funding has been increased. Mr. Haupt did not work in June but will work more hours in the future through the end of JPL FY97.

2.17.1.3 Schedule Status

- Schedule is maintained by JPL.

2.17.2 Quality/Config Management

- N/A.

2.17.3 Problems and Proposed Solutions Summary

- None.

2.17.4 Plans

- Continue work on GIF Status Broadcasting and Logging of Unrecognized Blocks Failure Reports.

2.18 CWO 18 - was closed on 17 Sep 95

2.19 CWO 19 - was closed on 17 Sep 95

2.20 CWO 20 - was closed on 29 Dec 95

2.21 CWO 21 - was closed on 17 Sep 95

2.22 CWO 22 - was closed on 7 Mar 95

2.23 CWO 23 - was closed on 17 Sep 95

2.24 CWO 24 - was closed on 18 Sep 95

2.25 CWO 25 - was closed on 31 Oct 95

2.26 CWO 26- was closed on 5 Dec 95

2.27 CWO 27- Advanced Communications Services (ACS) Data Delivery

2.27.1 Performance Status

2.27.1.1 Major Accomplishments

- Special Function Gateway (SFG) - Installed an SFG and a GMP at the Goldstone Emergency Control Center.
- Central Data Recorder (CDR) - Provided technical support during operational problems.
- Reliable Network Server (RNS) - Debugged problems encountered during Acceptance Testing.

2.27.1.2 Schedule Status

- On Schedule.

2.27.1.3 Cost/Funds Status

- CWO 27-2 is going to be under budget by 134K due to Wayne Tung and Chris Yung leaving ISDS and the work being discontinued by JPL.

2.27.2 Quality/Config Management

- Idle.

2.27.3 Problems and Proposed Solutions Summary

- None

2.27.4 Plans

- Brian Schladen will continue to support SFG, RNS, GMP and CDR on a part time basis.

2.28 CWO 28- Advanced Communications Services (ACS) Monitor & Control

2.28.1 Performance Status

2.28.1.1 Major Accomplishments

GCF Monitor and Control Program (GMP):

- Eric Barkley supported GMP and GMP workstation going into soak
- Performed various anomaly corrections.

2.28.1.2 Cost/Funds Status

- CWO 28 -2 for FY97 is going to be under budget by 14K due to Stan Mak leaving ISDS and the work being discontinued by JPL.

2.28.1.3 Schedule Status

- GMP is on Schedule.

2.28.2 Quality/Config Management

- Idle

2.28.3 Problems and Proposed Solutions Summary

- None

2.28.4 Plans

- Provide solution for operability enhancement requested with regard to GMP's automatic handling of SFG's serial communication channels.
- Determine which option JPL would like to pursue in resolving the printer problem for the GMP work-stations. Schedule a meeting with the powers that be to determine what is next for GMP.

2.29 CWO 29 - Network Monitor & Control Trans/Server Support

2.29.1 Performance Status

- CWO 29 is a Cat A position with requirements for support coordinated, but not directly managed by ISDS. Mr. Jay Cai has been working under this CWO as a consultant. No support was provided during the month of June.

2.29.1.1 Major Accomplishments

2.29.1.2 Cost Funds Status

- No work was performed under this CWO in April through June. At the level of support requested by JPL, this CWO would be over run by 13K. The customer is aware a modification is needed to cover Mr., Jay Cai charges and a supplement has been submitted.

2.30 CWO 30 - Network Control Program Common Services

2.30.1 Performance Status

2.30.1.1 Major Accomplishments

- Began SCF Acceptance Test.
- Thoroughly reviewed existing MSW directive handling.
- Designed Operator Directive Registry functionality and established "first cut" of functions to be implemented.
- Last month, it was noted that there was no project-level design of the DCE infrastructure for NCP. CS provided much of this design and resolved the problem. This is not part of the SOW for CWO-30 and impeded progress on other CS issues.
    - Designed DCE infrastructure for NCP, including security registry (principals, accounts, and groups), DFS use by servers, CDS, and administration, testing, and development provisions.
    - Determined NCP internal dependencies and developed NCP "cold boot" procedure for first turning NCP on or restarting after power failure.
    - Designed method of starting NCP's DCE-based services at machine boot.
    - Designed and implemented Operational Login (OL for SCF Delivery 1), the scripts which provide operations staff with continuous DCE credentials for the life of a console login with only a UNIX password.
    - Designed and implemented DSN Login (DL for SCF Delivery 1), a program which obtains and refreshes DCE credentials to be used for Operational Logins and server startup.
- Delivered CATA 1.0.3 (with new library format and improved test scripts for DMS) to CS CM, which delivered it to SPMC.

SysAdmin on ISDS (CWO 30) Suns.

- Moved Suns to Pasadena Engineering DCE Cell.
- Configured recently upgraded SPARC 20.
- Installed bash for operational login testing.
- Participated in trouble shooting T1 to T3 upgrade from ISDS to 525.

2.30.1.2 Cost/Funds Status

- On budget.

2.30.1.3 Schedule Status

- On schedule. See Appendix 1.

2.30.2 Quality/Config Management

- Updated RDD and delivered build for NCP MCIS1.1.2A

2.30.3 Problems and Proposed Solutions Summary

- Last month, it was noted that progress by EIS and NCP in setting up and configuring NCP hardware and infrastructure software is slow and that this caused delays in starting CS AT. On July 15, NCP completed the minimal requirements to do portions of CS AT. Starting CS AT is still held up because of:
  - The network connection from DTF-21 to Central Ops has planned outages daily from 7am-4pm the weeks of 7/14 and 7/21 and is very unstable after 4pm.
  - The ability to use DFS during network outages (a required ability) is not available so we cannot test during the above network outages.
  - The EIS-provided DUA access to X.500 is not properly configured.
- Last month, we raised a concern that CS would be pushed to start AT before DTF-21 and Central Ops were really ready. This has happened, and CS has spent time determining the missing parts and debugging the setup. This also impedes progress.

2.30.4 Plans

- Finish SCF 1.0.2 delivery including DL sample use, DL and OL test scripts, and updates to UG, STP1, STP2, and RDD.
- Finish MCIS 1.1.3 delivery including new code from MCIS, startup scripts, and necessary documentation updates.
- Start CS AT.
- Continue SysAdmin at ISDS.
- Work on SCF Delivery 2 plans and specifications.

2.31 CWO 31 - ACS RNS CS

2.31.1 Performance Status

2.31.1.1 Major Accomplishments

- This month Michael Dern continued to support the telemetry group in debugging their current anomalies (See CWO 14).

2.31.1.2 Cost/Funds Status

- CWO 31 is on budget.

2.31.1.3 Schedule Status

- Activities in Telemetry have delayed creation of a new schedule to cover tasks for the remainder of FY97. There are currently no specifically scheduled activities on this CWO.

2.31.2 Quality/Config Management

- Idle

2.31.3 Problems and Proposed Solutions Summary

- None.

2.31.4 Plans

- Continue to provide TCA support with data corruption anomaly
- Continue with design of translator.
- Continue to support all user's of FCS and GAS functions
- Continue to support 890-201 (TCA) changes and testing

2.32 CWO 32 - ACS TCA Common Services

2.32.1 Performance Status

2.32.1.1 Major Accomplishment

- This CWO was inactive this month.

2.32.1.2 Cost Funds Status

- CWO 32-2 For FY97 is on budget.

2.32.1.3 Schedule Status

- There are no scheduled activities on this CWO for the remainder of the FY.

2.32.2 Quality/Config Management

- Idle.

2.32.3 Problems & Proposed Solutions Summary

- None.

2.32.4 Plans

- Support the TCA / FTDD integration effort as needed.

2.33 CWO 33 - DSCC Radio Science Communications Processor (RSCP) Software

2.33.1 Performance Status

2.33.1.1 Major Accomplishment

- Conducted an interface meeting with NMC CDE, JPL and ISDS work order managers to review a draft MON-5-103A (NMC-DSP-R) interface document on July 2, 1997 at Bldg 525. Vui Vu, the Radio Science programmer received many good comments and ideas from this technical meeting.
- Completed a draft version for the MON-5-103A (NMC-DSP-R) interface document which combined the current MON-5-103 document (CMC-DSP-R) and the future Radio Science in automation mode (RS Closed Loop Control).
- Completed implementing 50% monitor data block which contains the RS configuration and track status to NMC.

2.33.1.2 Cost Funds Status

- CWO 33-2 For FY97 is going to overrun by 5k due to additional hours to meet the customer requirement. Expect to be back on budget in the next quarter due to diminished involvement by the Radio Science CDE.

2.33.1.3 Schedule Status

- The schedule for this CWO is maintained by JPL.

2.33.2 Quality/Config Management

- Idle.

2.33.3 Problems & Proposed Solutions Summary

- None.

2.33.4 Plans

- Continue work on the Closed Loop Control Task.

2.34 CWO 34 - Alaska SAR Programming Support was complete 15 Sep 96

2.35 CWO 35 - Never Placed On Contract

2.36 CWO 36 - Section 395 Programming Support

2.36.1 Performance Status

- Performed Multi-Mission Spacecraft Analysis (MSAS) test analysis and documentation. Due to the assigned software engineer taking his vacation, only 6 work days are documented here.

- Began V3.2 Testing (June 6 V3.1 Completed Testing.
- V3.2 Testing { closed means tested as fixed or (+rejected) }
- Total Tests run = 23, ARs opened = 5, ARs closed = 15 (+4)
- Attitude Analyzer
- Tests run = 6, ARs opened = 1, ARs closed = 3 (+1)
- Flight S/W Memory Tracker (FMT)
- Tests run = 9, ARs opened = 1, ARs closed = 6 (+2)

- Integrated Analysis Environment (IAE)
- Tests run = 3, ARs opened = 1, ARs closed = 3
- State Table Viewer
- Tests run = 5, ARs opened = 1, ARs closed = 2
- Catpub ARs closed = 1
- CM ARs opened = 1
- Mechstates ARs closed = 0 (+1)
- Maintained MSAS test web pages - http://puente/MSAS/testdocs/home.html
- Weekly updates to AR pages and MSAS AR database (96 ARs)
- Updated databases for applications, developers, and MSAS info

2.36.1.1 Major Accomplishment

- Completed V3.1 Testing on June 6
- June 2 V3.1 Delivery
- June 3 V3.1 Deliver Review Board (SysDR)
- June 6 V3.1 Completed Testing

2.36.1.2 Cost Funds Status

- CWO 36 -1 For FY97 is on budget.

2.36.1.3 Schedule Status

- The schedule is maintained by JPL.

2.36.2 Quality/Config Management

- Ongoing.

2.36.3 Problems & Proposed Solutions Summary

- None

2.36.4 Plans

- Cleanup web pages, review new development activities, and complete V3.2 testing

2.37 CWO 37 - Work Order Processing System (Section 644) - Closed 4 October 96

2.38 CWO 38 - Schedule, Estimating, Tracking System (SETS) (Section 644)

A contractual action is required by JPL to close this CWO.

2.39 CWO 39 - SPMC Configuration Management Support

2.39.1 Performance Status

2.39.1.1 Major Accomplishment

- Continued task as acting manager for the SPMC group.

- ACS: Processed a new version of TCA (10.2.4), including re-builds of MSW, FCS/GACC and 890-201/PPC. TCA turnaround time was approximately 75% faster than initial OP-J version. A utility called "diskdupe" was used to generate copies of TCA/VxWorks, significantly reducing the time required to prepare TCA copies. A high data rates anomaly is anticipated for subsequent TCA build. Transfer Agreement for TCA 10.2.4 and TGC 7.1.8 was signed-off to initiate Soak.

- NCP: DCAT 1.1.0 was built for NCP. Addressed problems with accessing SPMC built software on DFS (Evidently when software is "installed" on DFS, a separate process, which cannot be executed by SPMC due to potential corruption of the test bed, is required to make it available for others). OpenStep was installed on 'eridanus' for SPMC to build NPP in a manner consistent with other NCP programs. Initiated direct build status reporting to NCP test representatives.

- Discussed lines of code counts for DSN software with Chaw Hung. Presented a few slides on the DSN On-Line Software Library (DOSL) for site representatives visiting from Goldstone, Canberra and Madrid. Attended a Y2K group meeting to discuss SPMC's involvement in identifying all "active" DSN software programs. Reviewed DOSL Operator's Manual (draft). Initiated a table of "active" DSN software processed by SPMC as a "superset" for software to be placed on the DOSL machines and as a cross-reference for Y2K and DSN code count estimates. Modified tape-to-image and image-to-tape scripts for the DOSL system. Provided instructions on how to establish and complete the DOSL server "baseline". Generated notes on open issues, problems and limitations of the DOSL system.

- Dealt with a number of miscellaneous issues, including Anomaly Reporting system NAG reports, 8mm tape drive malfunction, ModComp machine maintenance, intermittent On-Line System errors in email notifications, identification of software versions missing from the On-Line System. Generated a list of SPMC Archive software IDs/versions processed during the last year for On-Line System input. Verified and closed out (acting as designated "OSE") several ARs written against the On-Line System.

- Returned to the ISDS Team on Monday, June 30th. Immediate tasks planned include delivery of MSW 1.8.4 and MPA 4.4.0 Final RDD to SPMC, assessment of ISDS dependencies on system 'kelvin', retrieval of DSN Engineering Handbook, and restoration of ISDS Team Configuration Management/Quality Assurance function. Will continue to support SPMC on an as-needed basis during the month of July.

2.39.1.2 Cost Funds Status

- CWO 39-1 is being extended through the end of July 1997. A CWO Supplement has been submitted to provide for an increase in funding. This has not yet been received.

2.39.1.3 Schedule Status

- This is an LOE support task.

2.39.2 Quality/Config Management

- NA

2.39.3 Problems & Proposed Solutions Summary

- None.

2.39.4 Plans

- Continue support until budget runs out.

2.40 CWO 40 - Network Operations Control Center Support was closed Feb 97.

2.41 CWO 41 - ISDS Additional Tasks was complete 15 Sep 96.

2.42 CWO 42 - Arrayed Doppler - PCWO canceled

2.43 CWO 43 - System Admin Support to EIS

- CWO 43 is a Cat A task and not directly managed by ISDS.

2.43.1 Cost Funds Status

CWO 43 is underfunded by approximately $11K due to requests from JPL for authorized OT. A supplement has not been submitted to provide for this additional funding.

2.44 CWO 44 - DCE Cell Design Consultation was complete in April 97

2.45 CWO 45 - Sea Dragon Command Center Test Bed

2.45.1 Performance Status

2.45.1.1 Major Accomplishment

Michael Guadarrama is an ISDS Software Engineer who supports the Sea Dragon Command Center Test Bed program. This month, he performed the following tasks.

- Revamped original architecture to support user/profile security.
- Recast system in an object-oriented design with user, profile, display, slide, and location objects.
- Implemented object method level security across entire system based on hierarchy of security levels.

2.45.1.2 Cost Funds Status

- CWO 45-1 has been extended and funding has been increased to cover customer requested overtime and an increase in the travel budget.

2.45.1.3 Schedule Status

- Schedule being maintained by JPL.

2.45.2 Quality/Config Management

- Idle

2.45.3 Problems & Proposed Solutions Summary

- None

2.45.4 Plans

- Assist with architecture design for CWL's distributed, persistent, object data store system and start learning about its CORBA and Java implementations.
- Complete my study of Booch Object Oriented Design Methodologies.

2.46 CWO 46 - EIS File Service Technical Writer

2.46.1 Performance Status

2.46.1.1 Major Accomplishments

- Development on the new EIS website continues. Testing on its usability was conducted by a human factors expert, associated with the lab, on a part time basis. The page is still not released, however, due to the network freeze for Pathfinder. A release date of July 9 is almost certain, since advertising in "ICIS Bytes" has been submitted for this site and the main EIS website (http://eis/eis/ -- our parent org).

2.46.1.2 Cost/Funds Status

- For FY97 is on budget.

2.46.1.3 Schedule Status

- The release of the website was delayed, first because of testing, and then because of the Pathfinder network freeze. This did allow time for further improvements. The new site has been ready to go whenever upper management says the word. Current plans are for July 9.

2.46.2 Quality/Config Management

- Revision control is in place.

2.46.3 Problems and Proposed Solutions Summary

- None.

2.46.4 Plans

- In July the new website will be released, announcements to that effect will be made, the old site will point to the new, and work will continue to fix the "wordiness" of much of the documentation.
- Coming up, DFS documentation will be generated and added this fall.

2.47 CWO 47 - VLBI Project Software Engineer

2.47.1 Performance Status

- Worked on tcfgen related code and integrated NAIF functions to calculate relativistic corrections as well as range (distance from ground station to spacecraft) corrections. Also enhanced the subroutine library.

2.47.1.1 Major Accomplishments

- SUBROUTINES
  - Separated subrs.c into several files including SubCharStrings.c, SubFloat.c, SubMem.c, SubTime.c.
  - Wrote spice (NAIF) prototype include file, spicePrototypes.h.
  - Implemented a uniform naming for all function names. Documented all functions.
  - Wrote StrToLower, SumElements, yydddsssss_f2SecFromYear, PadTabs, yydddhhmmss_f2SecFromYear, Vfclose, EnumQual, Round.
  - Added OPEN_LOG macro for Vfopen and Vfclose, more test cases,
  - Enhanced datastructure QualDesc, new datastructure KeyAndVal.
  - Fixed bugs in dddhhmmssmmm2SecFromYear, Vrealloc.
- TCFGEN
  - Started on a uniform naming for all function names and variables, and implemented uniform data logging/error processing.
  - tcfgen.c
  - Adding in NAIF relativistic code. Added computation of tdt_utc.
  - Implemented the -RelativitySampleInterval switch.
  - tcfAsciiOut.c
  - Added relativistic correction to AsciidumpTDF.
  - Enhanced formatting of PrintCSEKeywords, AsciidumpTDF, OLF.
  - Wrote PrintCSEStatsSummary,
  - Wrote AsciidumpTCFTC, AsciidumpTCFTCSub, printTheTCFTCListBanner.
  - tcfCmdLine.c
  - Added -doc, -basefilename, -RelativitySampleInterval, -ApplyRelativity,
  - -AberrationCorrection, -spkSS. -help -RawResidualRangeThreshold,
  - -OLFDumpRawResidualRangeGlitches.
  - Enhanced error checking, implemented a help function, improved structure of code.
  - Wrote CheckRepeated, HelpSub, UsageSub, CheckQualsSub.
  - tcfParseTDF.c
  - Enhanced error checking, improved functionality and structure of code.
  - tcfComputeStats.c
  - Rewrote to be general, or at least generalizable.
  - Wrote ComputeStatisticsResidualRange, ComputeStatisticsValidTCFValue.
  - Fixed bug with ComputeStatisticsResidualRange.
  - Enhanced ComputeStatisticsValidPhaseResidual.
  - tcfCmdLine.txt
  - Documented tcfCmdLine
  - tcfFilterInvalidate
  - Started working on tcfFilterInvalidate documentation.
- RELATVISTIC CODE
  - CalcRange.c and CalcRelCorr.c
  - Validated -aberrationcorrection.
  - Made sure qualifiers are present & not repeated.

- CalcRange.c Rewrote, based on t_rangdr2.c
- Echo command line to stdout.
- Added command line switches -pck, -aberrationcorrection,
- -spkSC, -lsk, -GTS removed -ut, added -start-ut, -stop-ut,
- -delta. Redid command line parser code. Added -spkSS.
- CalcRelCorr.c Rewrote as CalcRelCorr.c, fixed a few bugs.
- Added command line switches -lsk. Redid command line parser
- code. Added -aberrationcorrection. Added -spkSS.
- makefile Cleaned up make.

2.47.1.2 Cost/Funds Status

- This CWO is on budget.

2.47.1.3 Schedule Status

- Schedule is maintained by JPL.

2.47.2 Quality/Config Management

- All the software is under version control using cvs.
- Some module tests, some test cases used for quality control.

2.47.3 Problems and Proposed Solutions Summary

- None.

2.47.4 Plans

- Continue to enhance tcfgen and clean up source code and documentation.

2.48 CWO 48 - MGSO Documentation Technical Support

2.48.1 Performance Status

2.48.1.1 Major Accomplishments

- Completed eight large documents.

2.48.1.2 Cost/Funds Status

- On budget.

2.48.1.3 Schedule Status

- This is a LOE support task.

2.48.2 Quality/Config Management

- All documents are under version control.

2.48.3 Problems and Proposed Solutions Summary

- None.

2.48.4 Plans

- Continue progress with Version 22.2 , 22.3, 22.4 and TAS. Also to continue with SIS Modules Project and continue preparations to complete CWO 48.

2.49 CWO 49 Duplicating and Distribution Support

2.49.1 Performance Status

- The ISDS staff continued work on the Logistics Information Technology Office (LITO) service requests assigned.

- Work continued on the survey process. An ISDS staff member was invited to the Division 64 June Quality Council meeting to describe LITO's approach to providing Division 64 with an automated survey tool. The process was well-received and she was invited to return with more detailed information of how the process will be administered and costs. A draft survey process requirements document was completed and delivered to the JPL CWO manager for review. Although the document may not be formally distributed, it provides a basic understanding of the requirements for a technology-aided survey process in Division 64. A survey will be developed to assess training needs and initiate action on the Speaker Series.

- A Division 64 network configuration diagram has been completed and a database established with information about each server. The network configuration diagram will be posted on the WEB with each server shown as a linkable icon for more information about the computer.

- We began working with the Division 64 office to establish the requirements for an electronic filing system.

- Added more reporting capabilities to the Graphic and Vending Cost Comparison Application developed for Section 644.

- Worked on the Printed Vending application. Meetings were scheduled with users to collect requirements. A prototype of the application was shown to users. Also, worked on the new changes of the Work Order System.

- An ISDS staff member attended weekly meeting with Archives and Record group for the requisition and implementation process of the Online Archive System.

- The Monthly Subscription Expenditure Processing Application was completed for the library. The lead person of the library acquisition group was shown how to use the application via phone. She evaluated the application and e-mailed a list of her comments for enhancing the application.

- On-going support was provided for the Duplicating and Distribution group and others as necessary. A proximally 32 tech support phone calls received this month. All the questions/problems were answered or solved.

- One report being added to the Copier Information Management System as requested by a user. The development of the application is completed. My alpha test is basically done. I did inform my user that I am waiting for her to complete all the data entries before I convert them into the new application.

- A furniture inventory status report was compiled for JPL's furniture operations.

- Script files were prepared to convert the text based JPL employee data to SQL server. They were delivered to the Division. 64 network administrator for implementation.

2.49.1.1 Major Accomplishments

- Installed the Vendor Cost Comparison application for the Technical Information Section. By using this application they will be able to compare the graphic vending cost among their four venders, print reports and save the information for future use. This application also provide two other reporting capabilities for vendor monthly production and in-house monthly production reports. These reports were done by hand and were time consuming and subject to transcription and hand calculation errors.

2.49.1.2 Cost Funds Status

- This CWO will overrun by 7K if the full staff spends full time supporting this CWO as originally estimated. However, it is not anticipated that the fully projected level of effort will be required to complete the tasks assigned.

2.49.1.3 Schedule Status

- Schedule Maintained by Code 644.

2.49.2 Quality/Config Management

- N/A.

2.49.3 Problems and Proposed Solutions Summary

- N/A

2.49.4 Plans

- Continue software development, day-to-day information technology support, Help Desk and Division 64 support as required.

2.50 CWO 50 Electronic Forms and Inventory

2.50.1 Performance Status

- **Forms Management -** Completing the second round of testing of the Form Services Application. Revision of the draft Functional Design Document for the Forms Management System was initiated to incorporate the latest comments.

- Updated the webpage with new forms.

- We continue to response and help users on FormFlow. The number for this month was approximately 74 calls. The calls concerned using forms, databases, how to download, installing the software. etc.

- Working on a data collection effort for Division 641 and the FMS project to assign a "process to every form" using the DMIE process id. Division 64 would like to identify all of the forms that could be obsolete or replaced by the NBS project.

- **Inventory Maintenance -** Weekly maintenance and backup of the portion of the Inventory Control System that resides on the IBM 8130 continued. Created a copy of data fields from the mainframe Inventory system. This is the first request of many expected from the NBS folks.

2.50.1.1 Major Accomplishments

- **Forms Management -** Installed the Form Services Application on the Division 64 operational Forms server located in JPL building 111.

2.50.1.2 Cost Funds Status

- This CWO is on budget.

2.50.1.3 Schedule Status

- **Forms Management -** The project schedule has been revamped to reflect the details of the FMS development and a targeted date in September for demonstration of FMS established. The changes do not materially affect the original plan, and the project is currently on target. This schedule is maintained by JPL.
- **Inventory Maintenance -** There is no schedule associated with this support.

2.50.2 Quality/Config Management

- N/A.

2.50.3 Problems and Proposed Solutions Summary

- None.

2.50.4 Plans

- Continue development of FMS, upgrade of FSA to FormFlow 2, and provide user and inventory system support as required .

2.51 CWO 51 Physical Oceanography Distributed Archive Center was complete Jan 97.

2.52 CWO 52 NPP Development Lab was complete 4 July

2.52.1 Performance Status

2.52.1.1 Major Accomplishments

- The T3 has been activated, tested, and is operational.

2.52.1.2 Cost/Funds Status

- CWO 52 is underfunded by 12k. A CWO Supplement has been submitted to accommodate the deficiency.

2.52.1.3 Schedule Status

- The facility was ready to occupy on 14 July.

2.52.2 Quality/Config Management

- N/A

2.52.3 Problems and Proposed Solutions Summary

- None.

2.52.4 Plans

- Work on this CWO is complete. This CWO will be closed at the end of the FY.

2.53 CWO 53 - 34 Meter Array Development Support

2.53.1 Performance Status

2.53.1.1 Major Accomplishments

- This CWO was inactive this month because Ron Holden was on vacation for two weeks and supported CWO 14 for the rest of the month.

2.53.1.2 Cost Funds Status

- This CWO is going underrun by 16k because only 31% of the budget labor has been performed.

2.53.1.3 Schedule Status

- On Schedule.

2.53.2 Quality/Config Management

- Idle.

2.53.3 Problems and Proposed Solutions Summary

- None.

2.53.4 Plans

- Ron Holden will be full time on this CWO during the month of July.

2.54 CWO 54 - Galileo CDROM Technical Writer

2.54.1 Performance Status

- This work order has been extended and almost certainly will continue past the new date, August 1. The last few sections for "Extended Launchpad" were turned in, detailing the Comet Crash, getting ready for JOI (including probe release and engine firing), and the historic Arrival Day. These sections were increasingly difficult to generate since the writer was all too aware that an excitement level had to be reached and communicated to the reader, in addition to the usual problem of translating technical documents to an interesting, easily understood narrative.

2.54.1.1 Major Accomplishments

- While working on the sections, which are getting better and better as she understands how to work best with the material, learning how to structure the information for drama and interest, the technical writer found many new ways to explain the information to a non-scientific audience. She has suggested that there be a "list serv" to include the outreach team, the other writers, and maybe some select people who could check for accuracy. This hasn't been instituted yet, but they understand the need for our technical writer to be able to refer, for example, in "Launchpad" to the way something is explained in "Spacecraft Assembly Building."

2.54.1.2 Cost Funds Status

- This CWO is going to be underrun by 19k if the effort is ended in June. However, the customer has indicated the effort will continue beyond June.

2.54.1.3 Schedule Status

- The schedule maintained by the project. All schedules have been met to date.

2.54.2 Quality/Config Management

- N/A.

2.54.3 Problems and Proposed Solutions Summary

- The project had an incredibly ambitious schedule for completion of the extended sections. Our writer has been working very close to burnout, but finally got the project to understand that one section a week was just too quick to output. This job is essentially writing history, which demands some reflection and commentary not available in the original documentation used for the underlying research. A section every two to two and half weeks has been producing the best output (although still a stressful rate--but there seems little choice since we are now past our "finished" deadline of June). That schedule has been successfully maintained during the last month.

2.54.4 Plans

- Continue developing the document.

2.55 CWO 55 - TC and DM Test Support

2.55.1 Performance Status

- Cindy Lush continued development of regression tests for the Telemetry Input system (TIS) V22.4.
- Started testing the following new TIS projects (TIS) Change Requests (cr) and Anomaly Reports (ar):
- ar8177 - Started testing on Mars 98 (Solaris).
- ar8210 - Started testing on Mars 98 (Solaris).
- ar8264 - Started testing on SeaWinds (SunOS).
- ar8307 - Started testing on Cassini (HP).
- ar8311 - Started testing on SeaWinds (SunOS).
- ar8312 - Started testing on Multimission (Solaris).
- ar8320 - Started testing on Multimission (Solaris). Waiting for final fix.

- ar8338 - Started testing on Ulysses (SunOS).
- cr6914 - Started testing on Mars 98 (Solaris). Waiting for final fix.
- cr6919 - Started testing on Cassini (HP).
- cr6936 - Started testing on Lunar Prospector (Solaris).

- The follow TIS projects (TIS), Change Requests (cr) and Anomaly Reports (ar) are needing fixes (These fixes will probably not come until after V22.4 is final.):
- ar7080 - Lunar Prospector (Solaris). Data specific information needs to be added.
- ar8320 - Multimission (Solaris). Last 6 bytes are corrupted.
- cr6914 - Mars 98 (Solaris). 2 data fields are missing and 2 others are missing data.
- TIS034 - Mars 98 (Solaris). QQC definitions need to be added.
- TIS036 - Voyager (Solaris). One QQC_extract_end record is missing.

- Found the following problems and entered Anomaly Reports for them:
- 8307 Title: ERT Extrapolation off ? Criticality: 4
- 8311 Title: Bad Data in Invalid Packets Criticality: 4 Closed
- 8338 Title: Incorrect sclk_corr_flags and SCLK Overall Criticality: 3 Closed
- 8344 Title: No Data Specific Info in qqc_sclk_status Overall Criticality: 4 Open
- 8368 Title: Incomplete QQC Data Summary Overall Criticality: 3 Open
- 8390 Title: M98tis core dumps with incomplete K-hdrs Overall Criticality: 4 Open

- Helping Ulysses engineer find out why Ulysses data has duplicate SFDU's (Standard Formatted Data Units). Is TIS generating duplicate SFDU's? Not by the looks of initial testing.

- Started automating Voyager, so it can be included in the regression tests on both Solaris and SunOS.

- Started learning more about the browser and other utilities, so testing can be done more efficiently.

2.55.1.1 Major Accomplishments

- Completed testing the following Change Requests (cr) and Anomaly Reports
- (ar):
- ar5439 - Test was completed for Voyager (SunOS). This test was automated.
- ar8177 - Test was completed for Mars 98 (Solaris). This test was automated.
- ar8210 - Test was completed for Mars 98 (Solaris). This test was automated.
- ar8264 - Test was completed for SeaWinds (SunOS). This test was automated.
- ar8307 - Test was completed for Cassini (HP). This test was automated.
- ar8311 - Test was completed for SeaWinds (SunOS). This test was automated.
- ar8312 - Test was completed for Cassini, Multimission, Lunar Prospector, and Mars 98. Regression tests showed it was fixed.
- cr6814 - Test was completed for Lunar Prospector (Solaris). This test was automated.
- cr6909 - Tests were completed for Mars 98 and Deep Space 1 (Solaris). These tests were automated.
- cr6919 - Test was completed for Cassini (HP). This test was automated.
- cr6936 - Test was completed for Lunar Prospector (Solaris). This test was automated.

- Ran regression tests on all of the projects, updated regression tests that needed updating due to change requests, and verified all regression tests were working before the SyDR.

- Helped gather the necessary information needed for SyDR presentation and presented the information at the SyDR.

- Successfully automated the requirement for each (up to 255) APID (application Identification) to have a unique decommutation map for Mars 98. Up until the directive in TIS map_directory, this was a manual test. This directive only works on Solaris and HP, each project on these platforms need this automated test added.

- Successfully modified the regression tests for Cassini, Multimission, and Mars 98 to check for the correct number of extracted application identification packets along with the fact that the APID was extracted correctly.

2.55.1.2 Cost Funds Status

- This CWO is on budget.

2.55.1.3 Schedule Status

- On schedule for version builds.

2.55.2 Quality/Config Management

- N/A.

2.55.3 Problems and Proposed Solutions Summary

- N/A

2.55.4 Plans

- Continue to train new test personnel, continue to automate Voyager, continue to automate the decommutation tests for the applicable projects, and complete other tests as necessary.

2.56 CWO 56 - SPC and DMD Implementation

2.56.1 Performance Status

- **PLASMACAL**
- A preliminary set of data to be extracted from the SPR files has been identified. This data will be used in the construction of the DRVID-based range calibrations.
- An initial design for intermediate files and processing steps to be used during construction of the range calibrations has been produced.
- Initial processing algorithms for production of range calibrations have been outlined.
- **DMD Monitor**

- The monitoring system now needs to be ported and tested using a DEC Alpha computer. No work was done on the DMD Monitor system after mid-June.

2.56.1.1 Major Accomplishments

- None reportable.

2.56.1.2 Cost Funds Status

- This CWO is on budget.

2.56.1.3 Schedule Status

- Schedule maintained by JPL.

2.56.2 Quality/Config Management

- Continuing to get oriented to existing software and documentation.

2.56.3 Problems and Proposed Solutions Summary

- The recent upgrade to the operating system on quimby caused needed compilers to be unstable for longer than expected. Also, determining the meaning and significance of some of the SPR data fields has taken longer than expected.

2.56.4 Plans

- **PLASMACAL**
- Finish design for intermediate files and processing steps. Finish design and implementation for initial processing algorithms. Design and implement the data extraction and data validation/editing processing steps.
- **DMD Monitor**
- Develop user operator manual and make any necessary changes to the software after the test.

2.57 CWO 57 – Unix System Administration Support

2.57.1 Performance Status

- Routine system maintenance and administration tasks including software upgrades and installations, regular system backups, and providing user support were performed. User support activity was heavy this month, impacting work on long term projects.

2.57.1.1 Major Accomplishments

- Resolved ongoing troubles with running HP/UX 10.20 CDE environment on Macintosh terminals running Exodus. 2) Replaced ailing motherboard in HP 755 known as 'sideshow' to solve chronic rebooting problems.

2.57.1.2 Cost Funds Status

- This CWO is on budget.

2.57.1.3 Schedule Status

- Schedule/priorities determined by JPL.

2.57.2 Quality/Config Management

- Section e-mail, storage, and backup schemes continue being investigated for possible improvements.

2.57.3 Problems and Proposed Solutions Summary

- None at this time

2.57.4 Plans

- Continue migration to HP/UX 10.20 on HP systems. 2) Evaluation of alternative archive, backup and storage solutions. 3) Begin planning for eventual migration to 100BaseT in Building 238. 4). Install and integrate newly arriving HP C-180 and K-260 systems. 5) Write Purchase Requisitions for two additional HP J-282 workstations. 6). Create a regular backup routine using Legato for the DEC cluster. 7) Continue ongoing system administration and support.

2.58 CWO 58 – Never Placed on Contract

Cost/Funds Status

- This CWO will underrun by 2K due to Ms. Ravichantiara resignation and replacement has not been reguested.

2.59 CWO 59 – Antenna Sim Lab Support was complete in June 97

This was a six week Unix System Admin. task to clean up some servers and user accounts and perform system upgrades. This task was recently completed (practically before the contract ink was dry) on schedule and on budget.

Cost/Fund Status

Paperwork for CWO is in JPL contracts.

2.60 CWO 60 – Command Processor Assembly S/W Supt.

2.60.1 Performance Status

Work has begun on this CWO. Final paperwork has not yet been received from JPL contracts.

2.60.1.1 Major Accomplishments

- Ken Bell began supporting Richard Benesh on upgrades to the Command Processor On Schedule.
- Assembly code on May 23rd, 1997. This month, he has performed the following tasks:
- Finished 'smoke test' of first phase of work on DSN/CPA, saving "Carrier Suppression" tables on CPA system.
- Started on second phase, storing multiple "Project tables" on CPA system.

2.60.1.2 Cost/Funds Status

- Paperwork for CWO is in JPL contracts

2.60.1.3 Schedule Status

- Schedule being maintained by JPL

2.60.2 Quality/Config Management

- Idle

2.60.3 Problems and Proposed Solutions Summary

- None

2.60.4 Plans

- Continue work on storing multiple "Project tables" on CPA system.

3. Contract Cost Status

3.1 NASA Form 533M/Q

"A NASA Form 533M report shall be completed in accordance with the instructions on the reverse side of the form. A 533M shall be prepared for the total contract and for each CWO and for each CWO Level 2 WBS Item or below, as mutually agreed upon during negotiations. Reporting categories on each 533M shall be the elements of cost (e.g., labor hours, labor dollars, overhead costs, material, subcontracts, other direct costs, G&A) and profit or fee. A NASA Form 533Q shall be completed in accordance with the instructions on the reverse side of the form. Reporting levels and categories shall be the same as those required for the 533M."

3.1.1 General

All CWOs are on contract with the following exceptions: CWO 59-66.

DCAA has signed off on new provisional billing rates, making last month's unofficial rates now official (Appendix 7).

3.1.2 Reports

The following reports are included in this month's deliverable.

3.1.2.1 NASA 533M - JPL FY 1997 (Appendix 2)

The attached NASA 533M report is for the Infotec Development, Inc. accounting period Sept. 21,1997 to accommodate JPL FY97 . As agreed at the 11 September 1995 CWO/Cost Management meeting with JPL, the ISDS Team is reporting only the current JPL fiscal year (1997) data in the NASA 533. A summary report has been included that shows total costs to date by CWO. The September 1995 Monthly Activity Report (MA006) contains all JPL FY95 year-end cost data detail.

Also per agreement at the 11 September 1995 CWO/Cost Management meeting, we are reporting the latest received negotiated estimate for each CWO in the last column of the NASA 533.

Per JPL request, the Contract Value Cost *summary* on the NASA 533 reflects the *total negotiated costs* (last column) of all CWOs for JPL FY97 only. Since CWOs are used by JPL to establish funding and are based on latest revised cost estimates (actual costs plus estimate to complete), CWOs clearly do not track changes only in scope or original baseline estimates. ISDS attempts to maintain individual CWO Contract Values (2nd to last column) internally as *baseline target costs*. The ISDS Microframe cost management system is designed for building these baseline estimates "bottoms up" and can only be revised easily for changes in scope. Due to the following reasons, CWO baselines are becoming more difficult to maintain and are resulting in less meaningful individual CWO Contract Values.

- Most CWO efforts are not task-driven, since the period of performance for most CWOs starts and ends commensurate with the JPL fiscal year. It is difficult to maintain a target cost associated with the task, when the task may continuously change to fit the period of performance.
- The staffing for most CWOs are level of effort. Deltas in past labor costs are often attributed to a combination of scope, staffing, personnel rate, and requirement changes. Since CWO Supplements

are based on the total latest revised estimate, it is often difficult to determine the portion of cost associated with a baseline change and over/underun.

- Our JPL technical customers are often very involved in the staffing process. When personnel changes result in cost deltas, it is often unclear whether the baseline Contract Value should be changed.

The Contract Value Fee summary header reflects the total fee pool established by negotiated CWOs. The Fund Limitation is the total of all individual CWO funding for JPL FY97. Since some CWO's may be partially funded, or funded only for PCWO effort, this amount may differ from the sum of the Contract Value Cost and Fee.

Billing values are totals from ISDS contract inception through the reporting date.

3.1.2.2 NASA 533Q - JPL FY 1997

Appendix

3.1.2.3 Monthly Whole Hours/Dollars Report - JPL FY 1997(Appendix 3)

This report depicts monthly and cumulative whole hours and whole dollar cost estimates associated with each CWO. *It is based only on JPL FY 97 CWO effort.*

3.1.2.4 ISDS Cumulative Costs - From Contract Inception (Appendix 4)

This report summarizes cumulative actual costs and total latest revised estimates from inception of the contract, including JPL FY 95, 96 and 97 effort. It is provided per agreement at the 11 September 1995 CWO/Cost Management meeting with JPL and per NASA Handbook 9501.2B (Procedures for Contractor Reporting of Correlated Cost and Performance Data) Section 301, Paragraph 4b (10).

3.1.2.5 ISDS Personnel Allocation (Appendix 5)

This report is provided per request of JPL. It depicts the current approximate allocation of each ISDS employee to each CWO, at the end of the reporting month. This table only illustrates the association of an employee to a CWO and does not reflect equivalent man-months budgeted, percentage of the month actually worked, or any vacation/sick time.

3.1.2.6 CWO Funding Projections (Appendix 6)

This table projects the date that current CWO funding expires, if prior to the end of the period of performance. It also identifies whether 75% of funding will be reached within the next 30 or 60 days, for purposes of the contract funding limitation clause.

3.1.3 Subcontractor Costs

Subcontractor costs reported in November are based on CSC November period of performance costs reported by the CSC Program Management Office (PMO). NASA 533 subcontractor costs are stated in dollars that include CSC overhead and G&A. The overhead and G&A summaries on the NASA 533 depict IDI burdening on all elements of cost.

3.2 Overhead Report

"An overhead report shall provide a listing of the latest bidding, billing and actual overhead and G&A rates by cost centers. The fiscal year calendar shall also be included."

Attached as **Appendix 7** is the draft letter from the Defense Contract Audit Agency (DCAA), stating the ISDS provisional billing rates (see JPL line items). **Appendix 8** states the current overhead rates used in estimating FY97 costs in this month's report. ISDS accounting and NASA 533 reporting are based on the calendar provided as **Appendix 9**.

The following is a summary of ISDS overhead burdening by cost center.

IDI Employees

I. Apply IDI fringe rate (salary or salary-plus, as applicable) to direct labor dollars.

II. Apply ISDS Indirect Facilities rate (onsite or offsite, as applicable) to direct labor dollars. This rate is unique to the ISDS program, and is not company-wide.

III. Apply IDI G&A to the resulting total burdened amount (subtotal after I and II above).

CSC Subcontractor Costs

I. CSC applies company-unique overhead and G&A to direct labor dollars, and provides this as their invoiced cost to IDI.

II. Apply ISDS Indirect Facilities rate (onsite or offsite, as applicable) to CSC burdened amount in I above.

III. Apply IDI Material & Handling to CSC burdened amount in I above.

IV. Apply IDI G&A to the Indirect Facility burden pools, itemized in II.

Consultant (IDI only)

I. Apply IDI G&A to consultant invoiced dollars.

ODC's (billed by IDI only)

I. Apply IDI G&A to prime dollars.

3.3 Reconciliation

"A reconciliation report shall be prepared in accordance with the instructions on the reverse side of the 533Q.

The following is a program-level reconciliation of the contract estimates for JPL FY97 only. Due to the varying contractual status of each CWO, it is recommended that the narrative for each CWO be referred to when making deductions about cost performance or funding status. Several CWO Contractor Estimates have got ahead of the contractual paperwork and are more up-to-date than the Negotiated Estimates. In some cases, Contractor Estimates reflect requirements given verbally to ISDS, but not yet received in formal CWO Supplements. Because of this, we do not feel that a program-level reconciliation necessarily depicts an accurate cost comparison.

We have provided the most accurate estimates possible in the Contractor Estimate for these CWOs at the time of this report, regardless of the contractual status, in order to provide JPL with the most current cost projections possible.

A) Total of Individual CWO Contract Values (Based on ISDS target baselines)	$6,486k
B) Total Negotiated Cost Estimates (Based on CWOs signed by JPL Procurement)	$6,420k
(C) Estimated Final Contractor Estimate	$5,956k
D) Projected Underun Delta (B-C)	$464k
E) Total CWOs not signed by JPL	$66K

4. RECOMMENDED JPL ACTION

"The Contractor shall identify all critical items that require JPL attention, resolution and/or assistance to successfully maintain or improve the direction of the CWO in order to meet CWO objectives."

4.1 Contract Work Orders (CWOs)

- ISDS requests formal JPL closure to CWO 34. All effort has been completed.

5. Appendices

5.1 Schedules

5.2 NASA 533M - JPL FY 1997

5.3 Monthly Whole Hours/Dollars Report - JPL FY 19967

5.4 ISDS Cumulative Costs - From Contract Inception

5.5 ISDS Personnel Allocation

5.6 CWO Funding Projections

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5.7 IDI FY96 Provisional Billing Rates

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5.8 IDI FY96 Estimating Overhead Rates

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5.9 ISDS Accounting/Holiday Calendar